
Preventing the extinction of the Dinaric-SE
Alpine lynx population through reinforcement
and long-term conservation


LIFE16 NAT/SI/000634

# Annual evaluation of indicators for assessing impacts of project actions on local economy and communities and on ecosystem functions

*2018 Assessment*

*Action D5: Assessment of socio-economic impacts of the project actions on local economy and communities*
*Action D6: Assessment of project's impacts on ecosystem functions*

Aleksandra Majić Skrbinšek

Contributors of data (alphabetically): Aleksandra Majić Skrbinšek, Anja Molinari Jobin, Bojana Lavrič, Diana Žele, Hubert Potočnik, Irena Kavčič, Jakub Kubala, Magda Sindičić, Maja Sever, Marjeta Konec, Matej Bartol, Matija Stergar, Miha Krofel, Mihai Pop, Nina Šivec Novak, Nives Pagon, Srečko Žerjav, Tomaž Berce, Tomaž Skrbinšek, Urša Marinko, and Vedran Slijepčević

University of Ljubljana, Biotechnical Faculty

## Introduction

In order to identify and develop suitable indicators we used a participatory and reiterative process involving the members of project team discussing both our needs and practical realities such as availability of the data. Initial proposal was developed at the University of Ljubljana and was than discussed over two project team meetings. The plan is to carry out assessment repeatedly, for most indices on a yearly basis. The project team agreed also on methods by choosing the most suitable quantification tools to monitor and evaluate the chosen indices.

Assessment of socio-economic impacts and ecosystem services assessment, although carried out separately, are complementary as both connect directly to LIFE Lynx project objectives. Moreover, the concept of ecosystem condition is strongly linked to human well-being through ecosystem services. The main concept of ecosystem services is based on the general notion that ecosystems need to be in good condition to provide multiple ecosystems services. Therefore we assess and report both together.

In order to develop indices to assess project's impacts on ecosystem functions we used analytical framework developed under the EU Mapping and Assessment of Ecosystems and their Services (MAES) initiative and "Assessing ecosystems and their services in LIFE projects – A guide for beneficiaries".

Assessment results can help explain better to the general public and stakeholders the multiple benefits of the project and its connection not only to reaching biodiversity conservation goals but also to society and the economy with which they directly interface. As such assessment results facilitate transparent information sharing thus creating an important added value to the project.

## Assessment of socio-economic indicators

Measuring, evaluating and clearly demonstrating the impacts of conservation interventions to socio-economic environment is critical for management, accountability, and lesson learning. This is particularly important for project with substantial share of community-engaging activities or have potential to impact local livelihoods and quality of life in either positive or negative ways. LIFE Lynx project includes both elements – community-based approach to maintain high public acceptance of lynx, activities that have the potential to provide positive impacts to local livelihoods (e.g. tourism and education related activities) and lastly also increasing the number of lynx which can potentially cause damages to livestock thus negatively affecting local livelihoods.

Through assessment of socio-economic indicators LIFE Lynx project attempts to answer how the project activities have impacted social constructs and issues such as how has the project engaged public and especially key target groups (e.g. hunters, schools, farmers, general public, scientific community), how has the project impacted governance systems, has it created new jobs or otherwise impacted the wellbeing of local communities.

*Table 1: First yearly assessment of the economic and social indicators for the project LIFE Lynx.*

| INDICATOR | MEASUREMENT UNIT | METHOD | CORE RELEVANT ACTIONS | BASELINE SITUATION (BEGINNING OF THE PROJECT) 1.7.2017 | ASSESSMENT 2018 (1.7.2018, in some cases 31.8.2018 ) |
|---|---|---|---|---|---|
| **ECONOMIC INDICATORS** | | | | | |
| number of livestock killed by lynx per year (DSEA) | no. attacks | compenstation claim register, count | C9 | 7 | 1 |
| level of economic satisfaction for damage prevention method adopted | % positive responses | project questionnaire | C9 | - | - |
| number of farms using electric fencing at pastures | no. Farms | SFS PLI database, count | C9 | 41 | 57 |
| number of "painting workshop" products sold | no. products sold | project database, count | C11 | - | - |
| estimated revenue from toursim activites | Income in € based on estimated spending of 100 EUR per day | estimate | C11 | - | - |
| number of visitors and tourists taking guided walks/workshops linked to lynx or the project (market uptake) | cumulative no. customers | project database, count | C11 | | |
| jobs created | Full time equivalent | FTE calculated as 220 8-hour working days per year (Initial situation calculated as FTE annually working as permanent employees for the project beneficiaries on lynx-related topics when project starts), project financial reporting | all actions | 3.83 | 8,99 |
| **SOCIAL INDICATORS** | | | | | |
| number of physical planners involved in training seminar | no. of experts | project database, count | C7 | | |
| number of project team members involved in | No. project team members | project database, count | A8 | - | - |

| INDICATOR | MEASUREMENT UNIT | METHOD | CORE RELEVANT ACTIONS | BASELINE SITUATION (BEGINNING OF THE PROJECT) 1.7.2017 | ASSESSMENT 2018 (1.7.2018, in some cases 31.8.2018 ) |
|---|---|---|---|---|---|
| communication training | | | | | |
| number of damage inspectors educated | no. of damage inspectors that participated in education | project database, count | C9 | 0 | 0 |
| Number of representatives of tourism sector and protected areas educated | no. of tourism and protected areas representatives | project database, count | C11 | - | 0 |
| Number of participants/visitors at public events organized by the project | cumulative no. people present | project database, count, can include estimates for larger events for general public | all actions | - | 580 |
| Number of news entries published on lifelynx.eu | cumulative number of news entries | count, web page dashboard | all actions | - | 56 |
| Number of single visitors to the website | cumulative no. visitors | count, Google Analytics | E6 | - | 8240 |
| Number of subscribers to the Facebook | cumulative no. Subscribers | count, Facebook accounts (LIFE Lynx and Cro field blog) | E6 | - | 2200 |
| Number of views / broadcasts for video materials (film) | cumulative no. of broadcasts /shows | project database, count | E3 | - | 14 |
| Number of public events organised | cumulative no. events organised | project database, count | all actions | - | 16 |
| number of local inhabitants participating in the LCG meetings | cumulative no. participants | project database, count | E1 | - | 0 |
| Number of publications concerning lynx and project activities (leaflets, brochures, reports, guidelines etc.) produced, editions in different languages are reported separately | cumulative no. publications produced | project web page depository, count | A5, E1, E4, E6 | - | 11 |
| Number of national management documents adopted by state authorities | cumulative no. adopted documents | national legislation depositories | A5 | 3 | 3 |

| INDICATOR | MEASUREMENT UNIT | METHOD | CORE RELEVANT ACTIONS | BASELINE SITUATION (BEGINNING OF THE PROJECT) 1.7.2017 | ASSESSMENT 2018 (1.7.2018, in some cases 31.8.2018 ) |
|---|---|---|---|---|---|
| Number of articles or spots in the media concerning lynx and mentioning the project | cumulative no. articles and spots | project media clipping database, count (baseline includes articles published before the start of the project) | D4 | 2 | 129 |
| Number of schools involved in lynx related activities | cumulative no. schools | project database, count | E4 | - | 0 |
| Number of children and adolescents involved in lynx related schools activities | cumulative no. people present | project database, count, can include estimates for larger events | E4 | - | 0 |
| Number of scool teachers involved in lynx project | cumulative no. people present | project database, count | E4 | - | 0 |
| number of independent events attended by project team members | cumulative no. events attended | project database, count | E5, all actions | - | 45 |
| Cumulative number of participants at workshops for preparation of national management documents | cumulative no. people present | project database, count | A5 | - | NA |
| Hunter involvement | cumulative no. of hunting organizations involved in reinforcement and monitoring | project database, count | A3, C3, C4,…. | - | 93 |
| Number of public and private organisations (or projects) which are not partners being involved | cumulative no. of organisations / projects | project database, count | E5 | - | 33 |
| Level of satisfaction with lynx presence and with the species in general (DSEA) | % favourable replies | project database, count | A7, D4 | - | - |
| number of popular articles written by project team members | cumulative no. of articles | project database, count | all actions | - | 15 |
| number of game management plans | no. of local management plans | project database, count | C10 | 0 | 0 |

| INDICATOR | MEASUREMENT UNIT | METHOD | CORE RELEVANT ACTIONS | BASELINE SITUATION (BEGINNING OF THE PROJECT) 1.7.2017 | ASSESSMENT 2018 (1.7.2018, in some cases 31.8.2018 ) |
|---|---|---|---|---|---|
| adjusted to ensure prey | amended due to project | | | | |
| number of registered users of the geo database | cumulative no. of users | geodatabase, count | C6 | - | 0 |
| number of lynx data points in geo database | cumulative no. of data points | geodatabase, count | C6 | - | 0 |
| number of police inspectors trained | cumulative no. of trained police | project database, count | C8 | 0 | 0 |
| contribution to science (published papers, presentations at scientific conferences) | cumulative no. of contributions | project database, count | all actions | - | 0 |
| gender representation | cumulative share of female FTE in the project team | project financial reporting data, FTE calculated as 220 8-hour working days per year | all actions | - | 49.8% |
| gender representation | cumulative share of female € earned the project team | project financial reporting data, personnel expenses, FTE calculated as 220 8-hour working days per year | all actions | - | 47.62% |

## Assessment of biological and ecological indicators

**Main concepts**

Ecosystem services include all contributions of the ecosystems and all their parts towards benefits in various human activities. Typically ecosystem services are categorised into three main groups: (1) provisioning services (e.g. timber, food); (2) regulating and maintenance services (e.g. water purification), and (3) Cultural services such as recreation, tourism, education.

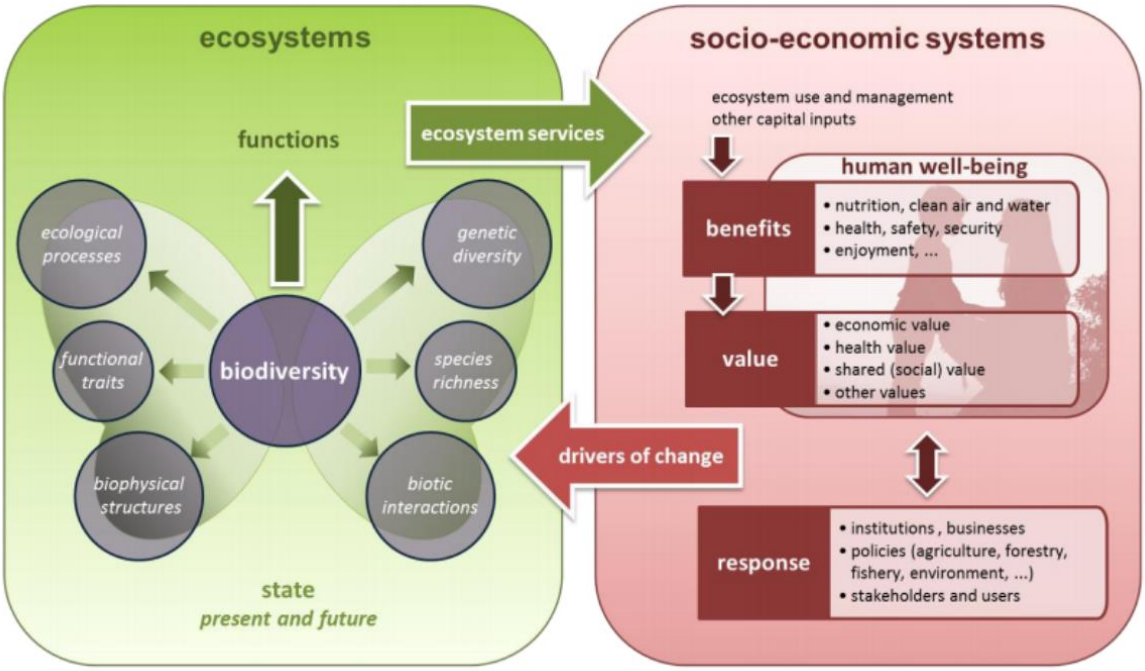


*Figure 1: MAES Framework (from "Assessing ecosystems and their services in LIFE projects").*

**LIFE Lynx assessment**

According to MAES analytical framework LIFE Lynx project deals mainly with the "forest and woodland" ecosystem type. Following the analysis of human-environment systems we found that many of the challenges of Eurasian lynx conservation that are being address through the project are also linked with other terrestrial and more human-dominated ecosystem types such as urban, grassland and cropland ecosystem types.

*Table 2: First yearly assessment of biological and ecological indicators*

| INDICATOR | MEASUREMENT UNIT | METHOD | CORE RELEVANT ACTIONS | BASELINE SITUATION (BEGINNING OF THE PROJECT) 1.7.2017 | ASSESSMENT 2018 (1.7.2018, in some cases 31.8.2018 ) |
|---|---|---|---|---|---|
| **BIOLOGICAL AND ECOLOGICAL INDICATORS** | | | | | |
| Number of threatened species | Number of individuals in the Dinaric-SE Alpine lynx population (DSEA) | estimate | C5 | 60 | - |
| Number of functional lynx terrieories | Teritory occupied by male and a female (DSEA) | confirmed through genetics & camera trapping | C5 | 15 | - |
| Number of lynx reproductions | Number of annually confirmed reproductions (DSEA) | confirmed through genetics, snowtracking, direct litter | C5 | 5 | - |

| INDICATOR | MEASUREMENT UNIT | METHOD | CORE RELEVANT ACTIONS | BASELINE SITUATION (BEGINNING OF THE PROJECT) 1.7.2017 | ASSESSMENT 2018 (1.7.2018, in some cases 31.8.2018 ) |
|---|---|---|---|---|---|
| | | observations (females on telemetry) & camera trapping | | | |
| Distribution (DSEA) | km2 | confirmed through genetics, snowtracking & camera trapping | | 6000 | - |
| effective population size | no. | estimated using genetics | C5 | NA | - |
| Inbreeding | Inbreedig coefficient | estimated using genetics | C5 | 0.3 | - |
| Number of sucessfully translocated animals | Number of translocated lynx | count | C3, C4 | - | 0 |
| Number of documented breeding events of the translocated animals | number of breeding events | Found litters through telemetry (females), documented using genetics (pedigree reconstruction) | C5 | NA | NA |
| Minimum number of lynx in the captures area in Slovakia | number of differnet animals | count (no. of detected individuals) | A1 | - | |
| Minimum number of lynx in the captures area in Romania | number of differnet animals | count (no. of detected individuals) | A2 | - | |
| Number of breeding events in the stepping stone area | number of confirmed breeding events | confirmed through genetics, snowtracking, direct litter observations (females on telemetry) & camera trapping | C5 | - | NA |
| Number of genetic samples colected in the project | cumulative number of colected genetic samples | count | | - | 100 |
| health status of lynx | cumulative number of examined dead lynx | count | C5 | - | 0 |

## Sources

Assessing ecosystems and their services in LIFE projects – A guide for beneficiaries
http://ec.europa.eu/environment/life/toolkit/pmtools/life2014_2020/documents/life_ecosystem_services_guidance.pdf

Mapping and Assessment of Ecosystems and their Services (MAES) -
http://catalogue.biodiversity.europa.eu/uploads/document/file/1673/5th_MAES_report.pdf